

REMARKS

The Examiner's indication that claims 19 and 20 would be allowable in independent form has been noted with appreciation. These claims have been converted to independent form and are therefore in condition to be formally allowed.

It is respectfully submitted that the rejection of claims 1 and 4-9, 11 and 18 under 35 U.S.C.103 over Bassemir and the rejection of claims 1-11 under 35 U.S.C.103 over Speer are not tenable and should be withdrawn.

The method of the present invention, in its broadest aspect, concerns producing a printed packaging material by applying an actinic radiation activatable liquid ink to the material, exposing the ink to a first actinic radiation, applying an energy-curable coating over the ink and curing the coating with a second actinic radiation. The actinic-radiation activatable ink is substantially free of curable functionality, i.e., functional groups that can be cross-linked or polymerized.

Bassemir relates to printing and coating untreated polyolefins using photosensitive inks and coating compositions. These printing inks and coating compositions contain a photopolymerizable polyethylenically unsaturated compound, a photosensitizer and, optionally, a solvent. (Col. 2, lines 30-33.) The photopolymerizable compounds are free radical polymerizable polyfunctional ethylenically unsaturated monomers and prepolymers which can contain two or more terminal ethylenic groups. (Col. 2, lines 34-41). The statement that these photopolymerizable compounds are polymerizable means that they necessarily contain functional groups which can be crossed-linked or polymerized. In contrast, the term "actinic radiation activatable ink" is defined in the present application as being substantially free of curable functionality, i.e., functional groups that can be cross-linked or polymerized. The fact that the ink of

this reference is not substantially free of curable functionality cannot be avoided by arguing that the term "substantially" is a relative term and not defined. The specification of this application is directed to those skilled in the art and those skilled people would clearly understand what the terminology means. They are informed, for instance, by the extensive exemplification of "actinic radiation activatable ink" and "energy-curable coatings" in the present case. Substantially free clearly indicates to the person skilled in the art that there are no appreciable amount of cross-linkable or polymerizable functional groups. Bassemir's photopolymerizable polyethylenically unsaturated compound contributes an appreciable quantity of cross-linkable or polymerizable functional groups to the composition of that reference.

Bassemir does teach that a colored photopolymerizable composition and a non-colored photopolymerizable composition can be applied in either order but regardless of the order, an ink substantially free of curable functionality is not be applied to a packaging material.

Speer relates to a radiation triggerable oxygen scavenging article with a radiation curable coating. The radiation curable coating can be overcoated, but nevertheless, that radiation curable coating has curable functionality. This is apparent from [005] which indicates that the oxygen scavenger prevents curing when UV or EB is applied, but that also means that the ink would be UV or EB cured (cross-linked or polymerized) if the scavenger was not present, and an appreciable quantity of cross-linkable or polymerizable functional groups are present. As to the sequence of curing, reference is made in [0084] to the previously applied Lovin patent (whose radiation curable inks contain curable functionality). Note also that [0087] discloses that regardless of the sequence of curing, and regardless of radiation source, the radiation

dose is sufficient to polymerize at least 80% of the reactive sites to cause polymerization and/or cross-linking. Containing such a high degree of cross-linkable or polymerizable material clearly means to those skilled in the art that Speer's ink is not substantially free of cross-linkable or polymerizable functionality.

The rejection of claims 11-14 under 35 USC 102 over Fukui is respectfully traversed.

The applicability of this reference to these claims is not appreciated even given their product-by-process nature. The claimed product is the result of a printing using a combination of "actinic radiation activatable ink" and "energy-curable coating" so that the resulting product is a printed packaging material. To reinforce this fact, an amendment has been made to claims 11-17. The Office Action makes reference to a packaging material in Fukkui, but that is merely something in which samples of a photographic emulsion cut into rectangular pieces were stored prior to being evaluated. There is no basis for asserting such storage packaging anticipates any of these claims.

The rejection of claims 11 and 15-17 under 35 USC 102 or 103 over Chatterjee is respectfully traversed. Here also, the Office Action makes reference to a packaging material, but does not point out where there is a suggestion of printing on the packaging or where there is any suggestion of a degree of cure of the printed packaging which results from the claimed method.

The rejection of claims 11-14 under 35 U.S.C. 102 over Mossbrook is not tenable and should be withdrawn.

Mossbrook discloses a method in which a printed image is applied to a thermoplastic film having a thickness of less than 15 mils using a radiation curable or

solvent based ink followed by applying an overprint varnish and curing the overprint varnish with radiation energy. As the absence of a rejection of the method claims signifies, Mossbrook fails to disclose exposure the ink to UV after being applied to the film and before the overcoating. Clearly, a radiation curable ink is the first applied material to the thermoplastic film, and there is no "actinic radiation activatable ink" layer on the substrate, rendering an anticipation rejection baseless.

As to obviousness, the Office Action does not point out where there is any reasonable basis for believe (or even to speculate) that the printed packaging material in Mossbrook contains any "energy-curable coating" material in the printing.

The Office Action's reference to 50 ppb is not understood in that the value in Mossbrook relates to extractable material rather than residual solvent.

In view of all of the above considerations, applicants believe the pending application is in condition for allowance.

Dated: May 7, 2010

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